COURSE OVERVIEW EE0895
AREVA Switchgear (6.6KV)



Course Title
AREVA Switchgear (6.6KV)

Course Date/Venue
Session 1: April 11-15, 2027/Meeting Plus 9, City Centre Rotana, Doha, Qatar
Session 2: August 29-September 02, 2027/Meeting Plus 9, City Centre Rotana, Doha, Qatar

Course Reference
EE0895

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

3.0 CEUs (30 PDHs) AWARD

Course Description







This Practical, highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.

This course is designed to update participants with the latest development of Circuit Breakers and to present some of the more common and updated aspects of low, medium and high voltage switchgear and 132 KV cables. It must be understood that there is an incredible variety of equipment used on low, medium and high voltage switchgear today. Switchgears play an important role in the distribution and control of electrical power in manufacturing or power plant and in a utility distribution system. Negligent maintenance practices can lead to power system inefficiency and loss of system reliability.

An older plant may have switchgear that was built in the forties in the older areas and modern switchgear in other areas as the plant was upgraded. This course will present maintenance problems to the maintenance manager and technician. Newer plants will probably have modern equipment of a limited variety and manufacture. It is these similarities that will be covered in the course.

This course provides invaluable information to those who wish to understand the role of acceptance testing, commissioning and start-up of circuit breakers, switchgears and 132 KV cables.

The importance of planning and preparation for the project, from engineering to commissioning and start-up, will be emphasized. This course deals with safety considerations and testing and start-up procedures for the major components of substation and particularly the switchgears and the 132 KV cables.

By reviewing electrical testing specifications developed by NETA, ANSI IEC 62337 and NEC 2011 participants can create a commissioning program designed to meet their facility's needs. It will also help them decide what can be done by in-house personnel and what is best left to an accredited electrical maintenance professional. The course will provide the delegates with a solid understanding of theory and standards.

Course Objectives/Outcomes & Benefits for the Participants

Upon the successful completion of this course, each participant will be able to:-

- Apply and gain a good working knowledge on AREVA switchgear (6.6KV)
- Discuss the operational procedures and electrical working practices
- Describe AREVA switchgear (6.6KV) and its functions
- Explain vacuum circuit breakers, electrical circuit breaker construction, operation and control
- Identify auxiliary equipment and exterior of switch panels
- Determine the treatment of electric shock and analyze switchgear and circuit breaker control drawings
- Review switchgear ratings and digital protective devices
- Illustrate digital protection relays HMI and layout, communication, monitoring, logistic and documentation
- Define instrument transformers including CTs and PTs and calculate fault current
- Discuss protection functions as well as operational and safety features of switchgear
- Review primary conductors, switch room housekeeping and battery units
- Illustrate AREVA switchgear (6.6KV) equipment failures analysis
- Maintain and troubleshoot AREVA switchgear (6.6KV) and carryout predictive maintenance of AREVA switchgear (6.6KV)

Exclusive Smart Training Kit - H-STK®



*Participants of this course will receive the exclusive "Haward Smart Training Kit" (**H-STK®**). The **H-STK®** consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides a basic overview of all significant aspects and considerations of HV switchgear maintenance who are involved in HV switchgear maintenance.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Haward's certificates are accredited by the following international accreditation organizations: -

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

- The International Accreditors for Continuing Education and Training (IACET - USA)

  Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

  Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

  Haward Technology Middle East will award 3.0 CEUs (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:



Mr. Sherif Bayoumi, BSc, is a **Senior Electrical Engineer** with over **30 years** of extensive experience within **Oil**, **Gas**, **Petrochemical** and **Power** industries. His expertise widely covers **Electrical** Installations & Utilities, Fixed Installations, Equipment & Appliances, Inspection & Test of **Fixed Installations**, Monitoring & Recording of Data for Consumer Utilities, **Electrical Systematics Troubleshooting**, **Electrical Distribution Systems & Control Circuits**, Electrical Parameters, **Symmetrical & Unsymmetrical Faults**, **Electrical Drawings**, **Relay Logic Circuits**, Test Requirements, Component Testing Procedures, Electrical & Control System, Troubleshooting **Transformers**, **Equipment** Troubleshooting, **System Grounding**, **Circuit Breakers**, **Protection Devices & Technology**, **Protection Relay**, **Solid State Relay**, Instrument **Transformers**, Grading & Protection Coordination, Electrical System & Equipment, **Generators**, **Gas Turbine**, Diesel Generators, **Power Transformers**, **AC & DC Motors**, **Substations**, **Switchgears & Distribution**, **Power System** Analysis, **Electrical Equipment Control Systems**, **Cables &** Domestic **Wiring**, **Overhead Transmission Lines**, **Electrical Safety**, **Electrical Protection**, **Batteries**, **Chargers & UPS**, Electrical Projects Handling, Electrical Measurements, Medium Voltage Switchgears (MVSG), Motor Control Centers (**MCC**), **Electrical Submersible Pumps** (**ESP**). He is also well-versed in **Preventive Maintenance**, Health, Safety & Environmental Management System (**HSEMS**), On-Shore & Off-Shore Electrical Installations, Engineering Studies, Water Desalination Units, **Induction Motors**, **Power Supply** Substations, Electro-mechanical Protection **Relays**, **Engineering Drawings**, **Industrial Power System Coordination**, **Machinery Vibration**, **Dynamic Balancing** Analysis, Material & Equipment Standard & Code System, Hazardous Area Classification, Safety Management System, Emergency Response, Permit to Work & Issuing Authority, Defensive Driving and Task Risk Assessment.

During Mr. Sherif's career life, he has occupied various key positions in several companies such as the **Electrical Maintenance Engineer**, **Senior Electrical Support Engineer**, **Lead Maintenance Electrical Engineer**, **Maintenance Electrical Engineer**, **Specialist Electrical Engineer** in **Abu Dhabi Company for Onshore Oil Operations** (**ADCO**), Gulf of Suez Petroleum Company (**GUPCO**) and West Desert Petroleum Company (**WEPCO**).

Mr. Sherif has a **Bachelor's** degree in **Electrical Power Engineering**. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Trainer/Assessor** by the **Institute of Leadership & Management** (**ILM**) and has delivered numerous courses, trainings, workshops, seminars and conferences internationally.

Training Methodology

Our courses employ an interactive, learner-centred methodology that integrates theoretical knowledge with practical application. The training is delivered through a suitable combination of some or all of the following methods, selected according to the course content and learning objectives:

- Instructor-led presentations and facilitated discussions
- Practical workshops and participant presentations
- Hands-on exercises and real-world case studies
- Equipment demonstrations and technical drawings
- Hardware- and software-based simulations
- Gamification & Role Play in soft-skills courses only
- Virtual Reality (VR) and Augmented Reality (AR)
- Instructional videos and other relevant training resources

This blended approach encourages active participation, strengthens practical skills and supports the effective application of acquired knowledge in the workplace.

Learning Design & Customization

This course can be customized to the exact requirements of clients. Haward Technology is so proud of our huge capabilities

Course Fee

US$ 6,000 per Delegate. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Operational Procedures*** *Operation of M.V. Switchgear ● Switchgear Locking Off ● Recording of Switching ● Protective Equipment ● Commissioning and Re-commissioning of H.V Apparatus ● Interruption of Electrical Supply - Entry to Enclosures Containing H.V Apparatus*
0930 – 0945	*Break*
0945 – 1100	***Electrical Working Practices*** *Work on H.V Apparatus ● Earthing ● Work on H.V Cables ● Fixing of Notices, Barriers and Screens ● Withdrawing Apparatus ● Work on Transformers ● Safety Locks ● Electrical Permit to Work - Electrical Sanction for Test - Work on L.V. Apparatus*
1100 – 1230	***AREVA Switchgear (6.6KV) Description & Functional Overview***
1230 – 1245	*Break*

1245 – 1420	***Vacuum Circuit Breaker & Electrical Circuit Breaker Construction***
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0930	***Electrical Circuit Breaker Operation***
0930 – 0945	*Break*
0945 – 1100	***Electrical Circuit Breaker Control***
1100 – 1230	***Auxiliary Equipment***
1230 – 1245	*Break*
1245 – 1330	***Exterior of Switch panels***
1330 – 1420	***Treatment for Electric Shock***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0930	***Switchgear & Circuit Breaker Control Drawings***
0930 – 0945	*Break*
0945 – 1100	***Switchgear Ratings***
1100 – 1230	***Digital Protective Devices***
1230 – 1245	*Break*
1245 – 1315	***Digital Protection Relays HMI & Layout***
1315 – 1420	***Digital Protection Relays Communication, Monitoring, Logistic and Documentation***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

0730 – 0930	***Instrument Transformers (CTs & PTs)*** *Operating Principles, Selection of Cts and Pts*
0930 – 0945	*Break*
0945 – 1100	***Fault Current Calculation***
1100 – 1230	***Protection Functions*** *Three-Phase Over Current & Earth Over Current ● Three-Phase & Earth-Fault Directional Over Current ● Thermal Overload ● Directional Power Protection ● Under/Over Voltage ● Circuit Breaker Failure Protection ● Voltage Controlled Over Current*
1230 – 1245	*Break*
1230 – 1330	***Operational & Safety Features of Switchgear***
1330 – 1420	***Primary Conductors***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0830	***Switchroom Housekeeping***
0830 – 0930	***Battery Units***
0930 – 0945	*Break*
0945 – 1100	***AREVA Switchgear (6.6KV) Equipment Failure Analysis***
1100 – 1230	***Maintenance & Troubleshooting***

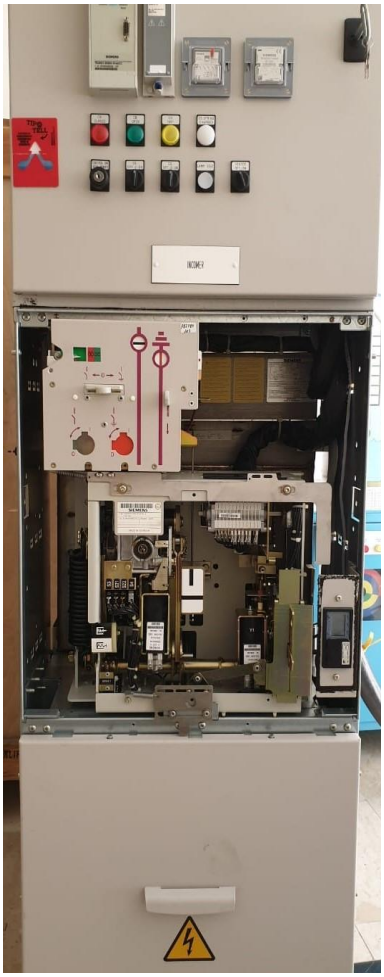
1230 – 1245	*Break*
1230 – 1300	***Predictive Maintenance of AREVA Switchgear (6.6KV)***
1300 – 1345	***Practical Maintenance Exercises***
1345 – 1400	***Course conclusion***
1400 - 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

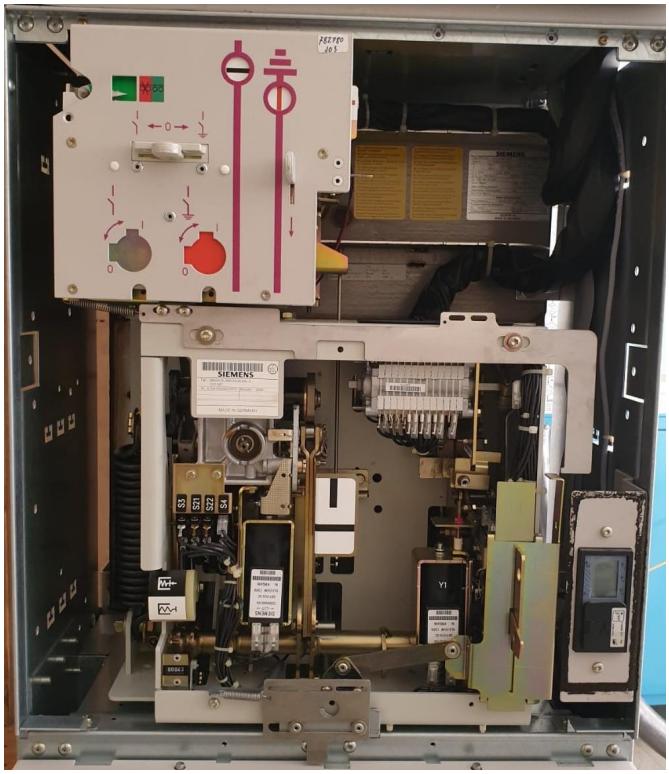
Practical Sessions (Online-Virtual)

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using our state-of-the-art "Switchgear Simulator", "GE Multilin Relay 469" and "GE Multilin Relay 750".

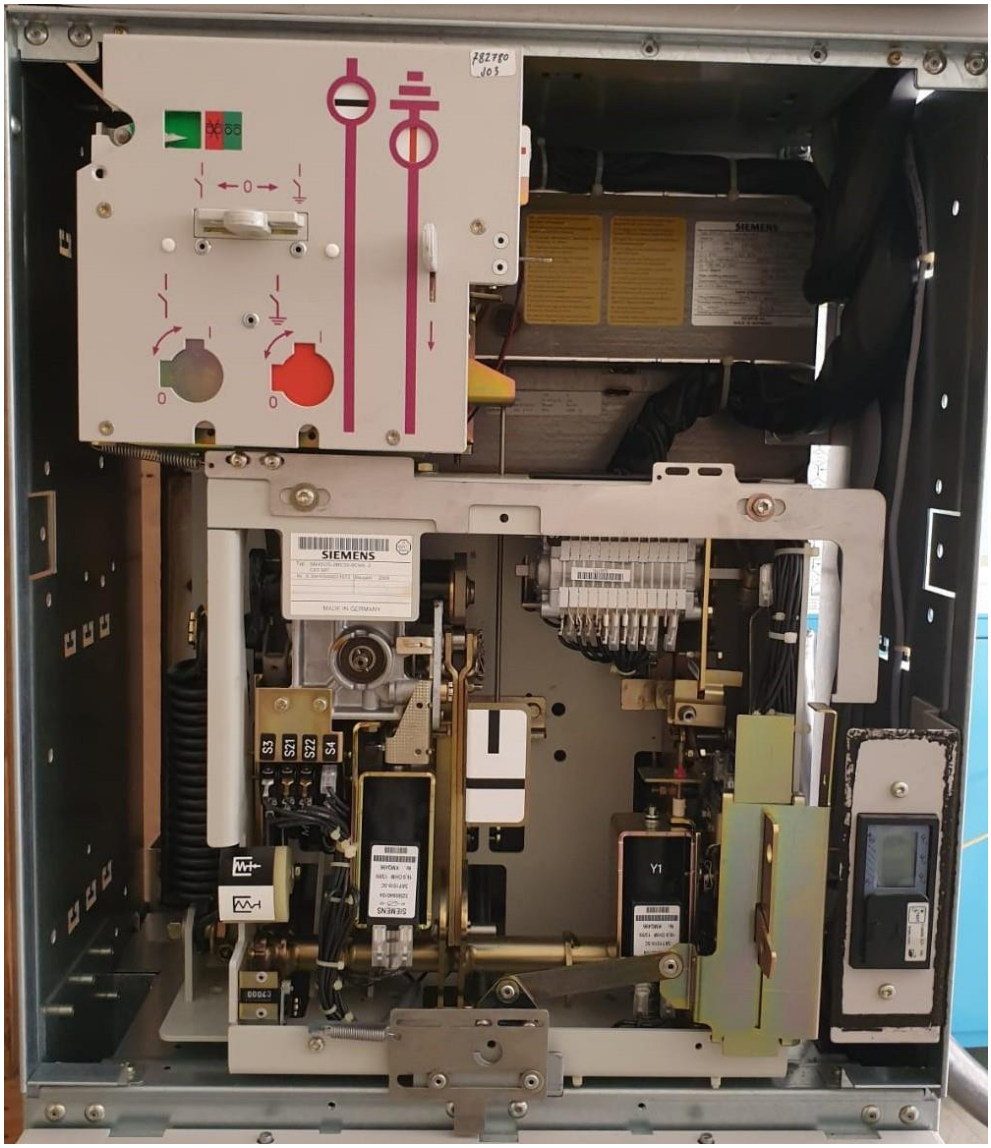








Switchgear Simulator



Switchgear Simulator





GE Multilin Relay 469 Simulator





GE Multilin Relay 750 Simulator

Course Coordinator
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